Astronomer

Performance Task

Introduction

An astronomer is a person or scientist who studies astronomy. Astronomy is the study of all stars, planets and objects in the sky. Stars are fun to learn about and watch at night. Did you know that the Sun is actually a star? The Sun is the closest star to our planet, but many other stars and groups of stars can still be seen from here on Earth. As you look up at the night sky, some stars appear as a group called a constellation. Constellations are groups of stars that form a picture or a pattern in the sky. Being an astronomer is very interesting because there are many patterns to observe and explore.

Big Idea / Essential Questions

Big Idea

- Students are able to observe, describe, and predict some patterns of the movement of objects in the sky.
- There are multiple perspectives that lead to the diversity of stories and legends.
- Much can be learned about a culture by analyzing their stories and legends.

Essential Questions

- What objects are in the sky and how do they seem to move?
- How can you understand a culture and its origins through its stories and legends?

G.R.A.S.P.

Goal

Your goal is to share information about stars at your local science museum. To do this, you will need to study the sky and keep track of the movement of stars over short and long periods of time.

Role

You are part of a team of astronomers. An astronomer is a person or scientist who studies stars, planets and other objects in the sky.

Audience

Your audience will be kids and adults who visit the local science museum. You will be sharing your knowledge and observations about the sky.

Situation

An astronomer is a person or scientist who studies astronomy. Astronomy is the study of all stars, planets and objects in the sky. Stars are fun to learn about and watch at night. Did you know that the Sun is actually a star? The Sun is the closest star to our planet, but many other stars and groups of stars can still be seen from here on Earth. As you look up at the night sky, some stars appear as a group called a constellation. Constellations are groups of stars that form a picture or a pattern in the sky. Being an astronomer is very interesting because there are many patterns to observe and explore.

The website below may help you learn about the sky above you.

Kids Konnect Astronomy

Astronomy for Kids

Products

1. Illustration

suggested starting product:

Illustrate a picture of a night sky. Be sure to label your illustration and give it a title.

- What does the sky look like at night?
- What do you see in the sky at night?
- Why is the sky dark at night?

Illustration - Astronomer

Achievement Levels	1	2	3
Illustration (x1)	Illustration and title are unclear and are not connected to the concept.	Illustration and title are somewhat clear and demonstrate minimal connection to the concept.	Illustration and title are clear and demonstrate connection to the concept.

2. Sunlight Chart

Astronomers study the patterns and cycles of objects in the sky. The sun is one of the objects that astronomers study. For this product, you are going to study the sun. You will need to find out exactly what time the sun comes up in the day and what time the sun sets at night. You may pick a few days during the week to get up early with an adult to watch the sky get brighter as the sun is rising. You will need to watch a clock and record this time. You will do the same at night when the sun goes down and it gets dark outside. These recorded times can be made into a chart with a category for sunrise and a category for sunset. When you look over your chart, what do you notice about the times of sunrise and sunset that you observed?

- When does the sun rise for you in the morning?
- When does the sun set for you in the evening?

- What do you notice about the sky in the evening?
- Where do you find the sun in the morning?
- What direction is the sun from your home in the morning when it rises? Is it north, south, east or is it west?

Sunlight Chart- Astronomer

Achievement Levels	1	2	3
Chart (x1)	Chart does not include a complete daily record of information.	Chart is somewhat neat and includes a daily record of information.	Chart is very neat and clearly shows a daily record of information.
The Earth and It's Universe (x1)	Student demonstrates minimal understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates some understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates solid understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.
Keeping Track of Time (x1)	Sunlight Chart shows inaccurately recorded times.	Sunlight chart includes some accurately recorded times.	Sunlight Chart includes accurately recorded times.

3. Star Observations

Student will complete this product at home with a parent or adult helper. Students will pick a clear night to go outside to observe the night sky. Your job is to find out how long it take to find a star. How long after the sun set did it take to see stars in the sky? Make sure to bring a notebook to keep track of the time the sun set and the time that you first saw a star. Also record any other observations you may have seen from watching the dark night sky. This will be a fun activity for students to understand more about what astronomers look for in the night sky.

- Do you see stars at night?
- Do you see planets at night?
- What happened to the sky after the sun set?
- What did you notice about the night sky?
- How can you use objects, drawings or an equation to figure out how long it takes after sunset to see stars in the sky?

Star Observations

Achievement Levels	1	2	3
Constellations (x1)	Student does not make any observations and minimally understands that constellations are a group of stars in the night sky.	Student makes some observations and seems to understand that constellations are group of stars in the night sky.	Student makes excellent observations and thoroughly understands that constellations are group of stars in the night sky.
The Earth and It's Universe (x1)	Student demonstrates minimal understanding that there are patterns of movement of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates some understanding that there are patterns of movement of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates excellent understanding that there are patterns of movement of the sun, moon and stars in the sky that can be observed and predicted.
Recordings and Observations (x1)	Student recordings and notes are very neat or organized.	Student recordings and notes are somewhat neat and may be easy to read.	Student recordings and notes are very neat and easy to read.

Achievement Levels	1	2	3
Elapsed Time (x1)	Student is unable to figure out how long after sunset it takes to see stars in the night sky.	Student figures out how long after sunset it takes to see stars in the night sky without using objects, drawings or equations with a symbol.	Student accurately uses objects, drawings and equations with a symbol to figure out how long after sunset it takes to see stars in the night sky.
Time of Clocks (x1)	Student cannot accurately show the times in either an analog or digital.	Student accurately shows the time the sun sets and the time stars are seen in either an analog or digital clock.	Student accurately shows the time the sun sets and the time stars are seen in both an analog and digital clock.

4. Sky Map

Use graph paper to help you draw a picture of the constellation you would like to learn more about. You will keep track of this group of stars for a few months. Ask your parents to help you find the constellation in the sky. Then, find the constellation in the night sky two times per week for three months (24 times) and see if you can tell if it stays in the same spot in the sky or if it moves. Draw a picture and write a sentence or two telling what you see each night. Make sure to label each drawing with the date of when it was observed in the sky. You will share what you learn with the class.

- What is a constellation?
- Do constellations move?
- Can you see constellations every night?

Astronomer - Scientific Drawing

Achievement Levels	1	2	3
Star Graphing (x1)	The constellation pictures are not very clear and not correctly labeled.	The constellation pictures are somewhat clear and there are some labels.	The constellation pictures are very clear and well labeled.
Sky Map Explanation (x1)	Student does not successfully explain night sky details and observations.	Student is somewhat able to explain night sky details and observations.	Student expertly explains night sky details and observations.
Constellations (x1)	Student does not make any observations and minimally demonstrates understanding of constellations..	Student makes some observations and somewhat demonstrates understanding of constellations.	Student makes excellent observations and thoroughly demonstrates understanding of constellations.
The Earth and it's Universe (x1)	Student demonstrates minimal understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates some understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.

5. Picture

You will need to make a series of 3 pictures to show people what you observed about the sun. As you record the time that the sun rises and sets during the day, make a note about where the sun is in the sky. You will also go outside at lunch or recess time to observe where the sun is located in the sky then. After doing this for a few days, think about what you observed. Is the sun always in a similar place at the same time of day? Once you have thought about your observations, create 3 pictures to help show people what you found. The first picture should show where the sun is in the morning. The second should show where the sun is located in the sky during lunchtime. The third should show where the sun is located in the sky when it goes down in the evening.

- What can you observe about the movement of the sun?
- When does the sun rise?
- When does the sun set?

Astronomer - Picture

Achievement Levels	1	2	3
Constellations (x1)	Student does not make any observations and minimally understands that constellations are group of stars in the night sky.	Student makes some observations and somewhat understands that constellations are group of stars in the night sky.	Student makes excellent observations and thoroughly understands that constellations are group of stars in the night sky.
The Earth and it's Universe (x1)	Student minimally shows understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student somewhat shows understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student shows excellent understanding that there are patterns of movement of the sun, moon and stars in the sky that can be observed and predicted.
Picture Drawing (x1)	Picture details are not clear and does not represent the constellation chosen.	Picture details are somewhat clear yet chosen constellation is is not very well depicted.	Picture details are very clear and chosen constellation is very well depicted.

6. Multimedia Presentation

As a class, you are going to create a presentation on the what you learned about astronomy. This presentation will be shown on local television. This presentation should include all the things you learned during this project. You should use pictures of the things you made and also pictures you found on the computer or in books.

- What is a presentation?
- What do people need to know about astronomy?
- What pictures will help people learn about the night sky?

Astronomer - Multimedia Presentation

Achievement Levels	1	2	3
Constellations (x1)	Student does not make any observations and does not have understanding that constellations are group of stars in the night sky.	Student does not make many observations and minimally understands that constellations are group of stars in the night sky.	Student makes excellent observations and thoroughly understands that constellations are group of stars in the night sky.
The Earth and it's Universe (x1)	Student demonstrates minimal understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates some understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates thorough understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.
Participation in Presentation (x1)	Student does not seem to understand concept and has difficulty contributing to multimedia presentation.	Student somewhat understands concept and somewhat contributes to multimedia presentation.	Student thoroughly understands concept and contributes to multimedia presentation with several examples and/or ideas.

7. Story: Fiction/Narrative

Create your very own constellation and write a story about this constellation. What

does it look like? What would you name it? Is it an animal, place or thing?

- What are constellations?
- What do constellations look like?
- Why are some names of contellations?

Story: Fiction/Narrative - Astronomer

Achievement Levels	1	2	3
Constellations (x1)	Student does not make any observations and minimally understands that constellations are group of stars in the night sky.	Student makes some observations and somewhat understands that constellations are group of stars in the night sky.	Student makes excellent observations and thoroughly understands that constellations are group of stars in the night sky.
The Earth and its Universe (x1)	Student demonstrates minimal understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates some understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.	Student demonstrates thorough understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted.
Constellations and Cultures (x1)	Student minimally demonstrates understanding that certain cultures and people have observed the constellations and have created stories and legends based on their appearance.	Student demonstrates some understanding that certain cultures and people have observed the constellations and have created stories and legends based on their appearance.	Student demonstrates thorough understanding that certain cultures and people have observed the constellations and have created stories and legends based on their appearance.
Story Narrative (x1)	Story shows very little focus and some information may be accurate or organized.	Story shows some focus and some information is accurate, organized and neat.	Story shows excellent focus and the information is very accurate, organized and neat.
Creativity (x1)	Story is unoriginal in idea and does not include pictures.	Story is somewhat original in idea and uses pictures to help the reader understand the information.	Story is original in idea and uses creative pictures to help the reader understand the information.

8. Journal Prompt

suggested final product:

Tell me what you learned about constellations.

- What is a constellation?
- What is astronomy?
- What have you learned about the night sky?

Journal Prompt - Astronomer

Achievement Levels	1	2	3
Content(can be for oral or written response) (x1)	Response contains a limited amount of accurate, factual information.	Response contains some accurate, factual information about the topic.	Response contains accurate, factual information about the topic.
Constellations (x1)	Student does not make any observations and minimally understands that constellations are group of stars in the night sky.	Student makes some observations and somewhat understands that constellations are group of stars in the night sky.	Student makes excellent observations and thoroughly understands that constellations are group of stars in the night sky.

Achievement in the Earth and its Universe (x1)	Student demonstrates little understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted. **1**	Student demonstrates some understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted. **2**	Student demonstrates strong understanding that there are patterns of motion of the sun, moon and stars in the sky that can be observed and predicted. **3**